

Impotence in the diabetic patient. Diagnostic research

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Erectile impotence is associated to Diabetes Mellitus in 30% to 50% of cases^{8 10}.

The pathogenesis of this condition may be organic or psychogenic, similarly to what happens in the non diabetic subjects⁵. The sacral parasympathetic system, with the erigentes nerves, regulates valve like structures (posters)⁴⁷, separating the cavernous arteries from vascular lacunae, whose aperture determines cavernous bodies filling and therefore erection.

The cavernous arteries are terminal branches of the pudendal arteries, that arise from the internal iliacs.

The organic pathogenesis of impotence may derive from an autonomous nervous system neuropathy¹¹, or from vascular lesions to the large, middle or small caliber vessels of the hypogastric system².

The aim of this study was to individuate the pathogenesis of erectile impotence in a group of diabetic patients, using various diagnostic methods.

Material and method

The examined group is composed by 25 diabetic and impotent subjects, whose age ranges from 32 to 58 years.

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They were defined as such when presenting with erectile impairment to various degrees, but such to prevent penetration.

In this group there is no correlation between the onset of the two conditions, with time gaps varying from six months to five years.

Seven subjects had clear clinical signs of aorto iliac axis arteriopathy: five were intermittent claudicantes, and two accused rest pain with initial trophic lesions to one foot.

Eight patients, two of which were arteriopathics, referred symptoms consistent with peripheral neuropathy.

In the whole group, six patients were affected by hypertension, that was pharmacologically controlled, to a systolic value smaller than 155 torr.

The endocrine pathogenesis was ruled out with hormonal tests (serum levels of testosterone, prolactin) that were in the normal range in all examined patients.

The nocturnal penile tumescence test (npt)⁴ was performed in all patients.

The connection of two strain gauges at the base and tip of the penis enables graphic display of erections physiologically occurring in the potent and psychogenically impotent patient during the r.e.m. phase of sleep. In the organic impotent they are either absent or reduced.

With a Parks mod. 101 Doppler flow meter, we probed the presence of pulsatile flow in the cavernous arteries. With the subject in the supine position, after placement at the base of the penis of a 2.5 mm wide cuff, we obtained artery occlusion together with signal disappearance. Systolic pressure measurement of the cavernous arteries was therefore possible.

By measuring the brachial systolic pressure at the same time, a penile brachial index (P.B.I.) was obtained by calculating the ratio of the two values (the cavernous artery with the highest pressure was taken).

Five subjects underwent urodynamic studies, in order to determine the integrity of the parasympathetic system, and one case was further examined with a bilateral hypogastric arteriography.

Results

Patients were divided in two groups by means of n.p.t.: the first one, composed by 15 subjects or 25%, had no nocturnal erection and was therefore organically impotent (Fig. 1a): (the whole group) had signs and symptoms of peripheral neuropathy.

The remaining patients had clear cut nocturnal erections and were diagnosed as psychogenic (Fig. 1b).

In the first group P.B.I. ranges from 0 to 1 with a value smaller than 0.6 in seven cases. In the second group it ranges from 0.75 to 1.1.

Urodynamic studies were performed in five patients out of the first group. In four of them an alteration of bladder motility lead to a sacral parasympathetic neuropathy which was responsible by itself (P.B.I. > 0.80) or together with vascular lesions (P.B.I. < 0.60) of impotence.

One subject had a P.B.I. of 0 without any bladder motility impairment: in this case angiography showed diffuse sclerotic lesions of the small pelvic

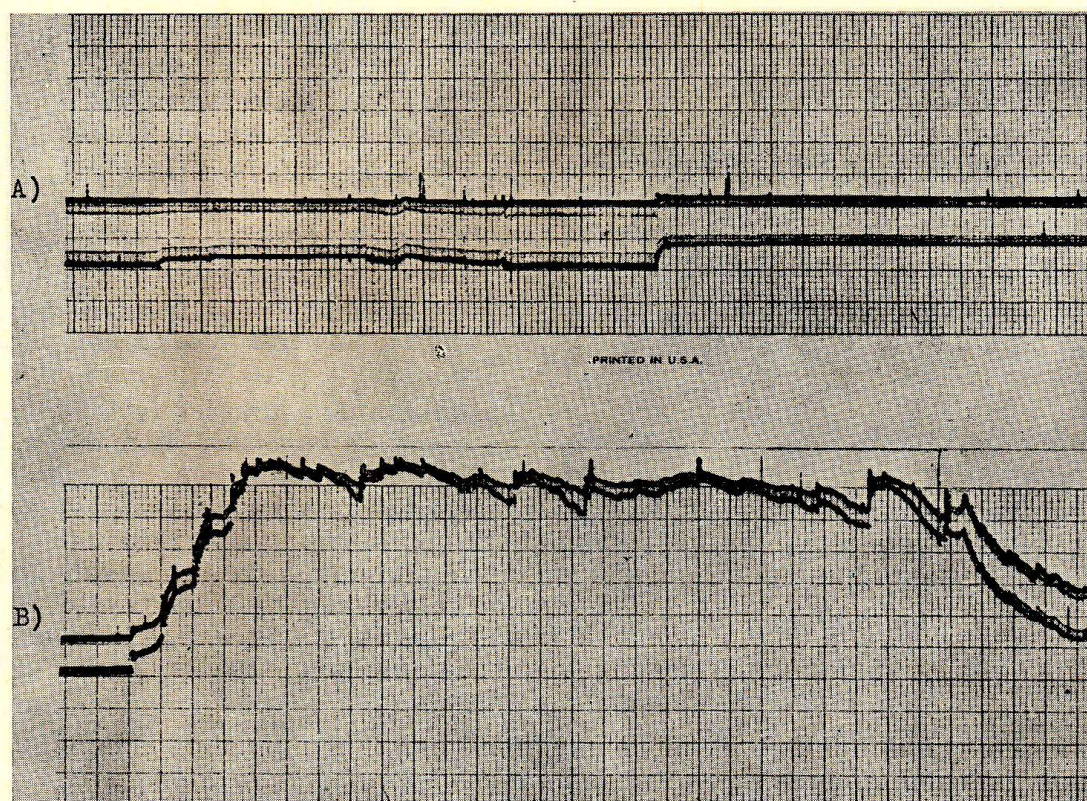


Fig. 1. - A) Graphic without erection (organic impotence). B) Graphic with clear erection during R.E.M. (psychogenic impotence).

vessel without visualization of the cavernous arteries (fig. 2).

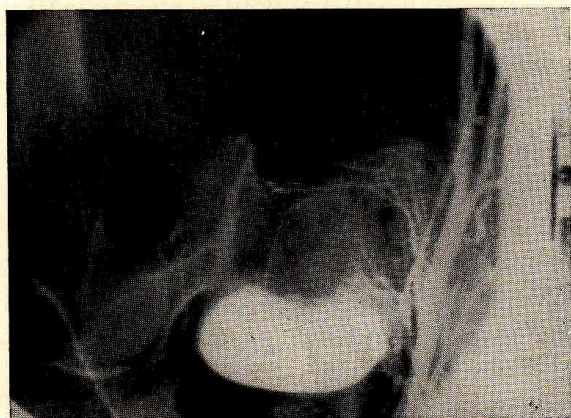


Fig. 2. - Selective angiography of the right internal iliac artery. Atherosclerosis of pudendal branches without visualization of the arteries of the penis.

Discussion

Our study shows that organic factors are extremely frequent in determining erectile impotence in the diabetic patient (15 out of 25 cases or 60%).

The remainder (10 patients or 40%) was proved as psychogenic by means of n.p.t.

In a prior study of ours we analyzed the results of penile doppler sonography in a group of patients whose aorto iliac lesions were angiographically documented; we also determined that a P.B.I. smaller than 0.6 makes erection impossible due to inadequate perfusion: in this group such condition was found in seven cases.

Urodynamic studies enabled the individuation of peripheral neuropathy.

We can also say that nervous and vascular pathology may coexist. The

significant concept arising from our work is that signs and symptoms of an aorto iliac femoral arteriopathy cannot individuate an impotence of vascular origin (3 of these patients had a P.B.I. of 0.8 and valid nocturnal erection, and others without signs and symptoms or arteriopathy had no nocturnal erections and a P.B.I. smaller than 0.6).

A bilateral selective hypogastric arteriography, performed in one of these subjects, confirmed the presence of severe lesions of the erectile tissue arteries: this case is an indication to penile revascularization surgery, which seems to offer encouraging results for a physiological solution of such condition.

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